

CONDUCTED BY THE
INTERNATIONAL CITY MANAGERS' ASSOCIATION

1313 East 60 Street, Chicago 37, Illinois

Report No. 178

November, 1958

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REGULATION OF RESIDENTIAL OUTDOOR SWIMMING POOLS

What has been the extent of growth of privately owned swimming pools? What are the standards to be considered in drafting a swimming pool ordinance?

Although once considered as a symbol of only the wealthy, the backyard swimming pool is rapidly gaining in popularity in many sections of the country. As indicated in Table 1, the number of private swimming pools gradually grew from 2,500 in 1947 until, by the beginning of 1958, this number had risen to 87,500. The "1958 Market Report on the Swimming Pool Industry" reported that 44,000 permanent swimming pools were constructed in 1957, 30,500 of which were in backyards. The other private swimming pools were for motels (4,500 — an increase of 33 per cent over the previous year), hotels, municipalities, private clubs, and neighborhood groups.¹

Especially pronounced was the growing trend toward lower-priced pools, since the average selling price of these pools was \$3,700, with the average in the top price range of \$7,346 and in the low price range of \$3,225. Of these pools, 93 per cent were 20 by 40 feet or smaller.

Representatives of the swimming pool industry expect to build 53,000 pools during 1958. The number of local dealers involved in the construction of pools increased from 400 in 1955 to nearly 3,000 in 1958, and the volume of business was expected to reach \$600 million.

Alexander R. Hammer, writing in the *New York Times* of May 11, 1958 stated: "Accounting for the popularity of residential pools is the population migration to the suburbs and the fact that many people no longer consider a pool a luxury but a capital improvement in property, an investment in family health and pleasure."

Lower prices, ease of installment credit, and wide geographical distribution of backyard pools (see Table 2) has presented, or will present, a problem to many municipalities. Are private pools to be installed at random or will some form of regulation be necessary? Most administrators will recognize the difficulty of instituting reasonable regulations, especially on a retroactive basis, once a number of pools have been installed. Although public swimming pools are rather strictly regulated, either through state or local health provisions, most municipal codes are silent as to the regulation of private swimming pools. The state may also delegate its inspection and supervision of public pools to the local health authority, as is the case in Michigan.

The regulation of private outdoor swimming pools is prompted by the following considerations: safety, health, and potential nuisance. Safety requirements include grounding electrical appliances and prohibition against overhead wires crossing the pool area. Also included under safety is preventing the swimming pool from becoming an attractive nuisance to infants and the unwary. To assure this, some municipalities have adopted fencing regulations or require a pool cover, and they may also require that the pool be drained if the owner is going to be absent for an extended period of time. The latter requirement is somewhat misleading, since an empty pool may constitute a greater hazard than a filled one. Another safety consideration is that the pool structure shall be engineered and designed to withstand the expected forces to which it will be subjected.

Of equal importance to safety are the public health considerations. These include the

¹ These statistics and Tables 1 and 2 are derived from the "1958 Market Report on the Swimming Pool Industry" prepared by the editors of *Swimming Pool Age* (Hoffman-Harris, Inc., 425 Fourth Avenue, New York 16).

Table 1

Growth of Swimming Pools by Type

Classification	1/1/48	6/1/52	1/1/54	1/1/56	1/1/57	1/1/58
Residential	2,500	8,500	15,000	35,000	57,000	87,500
Commercial (including cabana & beach clubs operated for profit)	800	850	900	1,200	2,300	3,300
YMCA, institutional, school, hotel, motel, etc.	2,200	2,700	5,200	8,800	14,400	21,100
Municipal, County, Community . . .	4,000	4,300	4,700	7,400	9,300	11,800
Country & city club, apartment house, home development, neighborhood group, miscellaneous .	1,200	1,500	2,500	3,600	6,000	9,300
Total	10,700	17,850	28,300	56,000	89,000	133,000

Source: *Swimming Pool Age*, "1958 Market Report on the Swimming Pool Industry," p. 13.

disinfection of the water, germicidal and bacteriological control, prohibition against cross-connections with the public water supply, provision for filtration and recirculation, and the requirement that the pool be kept free of floating material, sediment, and debris.

Under the heading of potential nuisance would be such factors as the location of the pool in relation to other structures, including setback and side yard provisions, and the provision for the lighting so that it is not offensive to neighboring properties.

Another consideration is the control of noise. A few municipalities have enacted ordinances limiting the hours of the use of residential pools, but this is felt to be arbitrarily restrictive. Many municipalities, however, have enacted separate noise control ordinances that define elements of disturbing the peace.

Taking into consideration the factors listed above, many administrators will find that they are able to exercise control over the installation of private swimming pools through existing codes such as the zoning ordinance, building code, plumbing code, health code, fencing regulations, and so on.

To provide maximum protection to the property owner and to the municipality, it is advisable

Table 2

Geographic Distribution of Pools

Area	1/1/56	1/1/58
Pacific Coast	29,000	62,600
Texas & Midsouth	9,000	22,400
Arizona, New Mexico & Mountain States . .	3,200	5,900
Florida	3,800	8,800
Midwest	5,000	15,500
East	6,000	17,800
Total	56,000	133,000

Source: *Swimming Pool Age*, "1958 Market Report on the Swimming Pool Industry," p. 11.

to investigate the feasibility of adopting a comprehensive ordinance for private residential pools or of revising the public pool ordinance so that it will differentiate among public, semipublic, and private pools. This comprehensive ordinance will establish a routine for registration and inspection, and will provide certain requirements for health and safety not specifically covered in other ordinances.

Representatives of the swimming pool industry state that one of the major difficulties encountered in municipal regulation is the confusion on the part of public officials as to the differences in minimum standards needed for public, semipublic, and private pools. In order to assist the municipality in the preparation of the necessary codes for the regulation of swimming pools, the National Swimming Pool Institute (Harvard State Bank Building, Harvard, Illinois) has set up 10 regional subcommittees on standards which can offer immediate and personal consultation on request.

This report is based on standards recommended by the National Swimming Pool Institute and on examination of 38 ordinances pertaining to pools in effect throughout the country.

Comprehensive Ordinance

Although a number of municipalities provide for the regulation of residential swimming pools through amendments to building or other regulatory codes, many have preferred to adopt a swimming pool ordinance with cross references to other regulatory ordinances. This has the advantage of providing consolidated information for potential pool builders or owners. It also recognizes and differentiates the special needs and problems of public, semipublic, and private swimming pools.

Discussed below are a number of sections that should be included in each swimming pool ordinance. The minimal standards for each section must be determined by the individual community with regard to structural requirements, type of water, and so on.

Definitions. If the ordinance is to be applicable to all swimming pools, it should define a swimming pool (as contrasted to a wading pool or decorative body of water), a public swimming pool (open to the public and usually operated for a profit or on a self-sustaining basis), a semipublic swimming pool (in which will be placed hotel and motel pools), and a private or residential swimming pool. These definitions are included to provide the basis for differential minimum requirements for each type of pool.

For a residential swimming pool ordinance, the following definition is sufficient: "A swimming pool is any constructed pool used for swimming or bathing over 24 inches in depth, or with a surface area exceeding 250 square feet." (Some ordinances specify 18 inches in depth.)

A private swimming pool shall include all constructed pools which are used, or intended to be used, as a swimming pool in connection with a single family residence and available only to the family of the householder and his private guests.

This section also could include the nomenclature for the mechanical aspects of the pools especially those for the recirculation and disinfection system.

Application for Permit. This section should detail how an individual is to make application for a permit to build the swimming pool (see Appendix A for a sample application form). Although most ordinances require only "detailed plans and specifications," the plans and calculations should be in sufficient detail to show the following: (1) plot plan with dimensions drawn to scale; (2) pool dimensions, depths, and volume in gallons; (3) type and size of filter systems, filtration and backwash capacities; (4) pool piping layout, with all pipe sizes shown, and types of material to be used; (5) rated capacity and head at filtration and backwash flows of the pool pump in gallons per minute with the size and type of motor; (6) location and type of waste disposal system; (7) structural calculations and details prepared and signed by a registered civil engineer, if such is the building code requirement; (8) relation of the pool to existing structures; and (9) distance from property and setback lines.

This section also should assign responsibility for review of plans (health, sanitary, electrical, plumbing) and inspection of construction.

Fees. This section includes the fee for the swimming pool construction permit and states what inspections are covered by this fee.

Cross References. Although not considered a necessary part of the ordinance, a section that lists the references and shows the relationship to other applicable codes is convenient for pool builders and provides ease of reference for the enforcement officials.

The first of these codes is the zoning ordinance. A residential swimming pool is considered a structural improvement to a parcel of land and thus is subject to the zoning regulations of the municipality. Since the zoning ordinance is the principal instrument for carrying out the land-use plan of the community, it contains provisions concerning lot size, setback, and percentage of the lot that may be covered. This poses a number of questions that must be answered by the community: In what zones are residential swimming pools to be permitted? Is the residential swimming pool to be considered an accessory use? What are the minimum yard requirements? What percentage of the lot may be covered by the pool and appurtenant structures? In relation to yard requirements, is there to be a distinction between the pool and the structure for the pumps?

Another code that should be referred to is the building code and the provisions for the inspection of the structure. This becomes rather important in view of the recent emphasis on "do-it-yourself" practices. Once the minimum standards have been determined and the proper plans submitted, it remains but for the proper official to make the necessary inspections.

The plumbing code should contain provisions about cross-connections with the public water supply, having a licensed plumber make the proper taps, and the disposal of waste water.

The electrical code should contain provisions for the proper grounding of underwater illumination and prohibition of power lines from crossing over the pool.

This section may also include the provision for the health officer to make the necessary inspections once the pool is in operation and after the standards, as discussed below, have been established for chlorine residual, hydrogen ion concentration (pH factor), and clarity. This may pose a problem to the smaller municipality without a full-time health officer. But if the need for additional help in the periodic checking of the pools is recognized, it is possible to arrange for the county or other government having primary public health jurisdiction in the area to make the inspections on a reimbursable basis.

Specific Considerations. The major portion of the ordinance regulating residential swimming pools is devoted to the technical minimum requirements. This is an area that is open to some discussion because of the varying problems presented by the individual community. For example, South Miami, Florida, has established rather stringent structural requirements for areas where soil conditions "are doubtful." In Grand Rapids, Michigan, after the preliminary draft of the ordinance had been prepared, salesmen, contractors, and local representatives of swimming pool distributors were invited to meet with representatives of the city to discuss the proposed ordinance. Although complete agreement was not reached on some technical problems, at least mutual understanding was developed.

As a guide for municipalities considering the regulation of residential swimming pools, the National Standards Committee for Residential Pools of the National Swimming Pool Institute has developed a set of minimum standards and a composite swimming pool code. Both the standards and the composite code are available upon request. Thus, it is up to the individual municipality to develop minimum standards which are consistent with the protection of public health, welfare, and safety but are not so stringent as to make installation of a residential swimming pool prohibitive in cost.

The following technical standards should be in the ordinance:

1. Construction. Generally it is enough to state that the pool structure should be engineered and designed to withstand the expected forces to which it will be subjected, which will cover steel, concrete, cinder block, plastic lined, and other types. Maximum slopes for walls and floor should be designated and minimum depth and area for diving boards. (To a depth of five feet from the top, the wall slope shall not be more than one foot horizontal in five feet vertical. The slope of the floor

in the shallow end shall not exceed one foot vertical to seven feet horizontal. The transition point between shallow and deep water shall not be less than four and one-half feet and not more than five feet deep.) Another consideration is the structure surface; that is, the pool sides and bottom shall be constructed of smooth, nonabsorbent materials, free from cracks, and be so constructed as to be properly drained through one or more metal grated openings. Provision also could be made for minimum size walk areas and the slope with which these walk areas are to drain away from the pool.

2. Filter System. This should cover specifications for a pressure sand filter system or an approved equal. In 1957, 99.6 per cent of the residential pools built included filters either of sand or diatomaceous earth. It should also specify necessary turnover capacity at a given rate. The turnover capacity is perhaps the one technical standard that causes the greatest amount of discussion. In the ordinances examined, the required turnover rate varies from once in eight hours to once in 24 hours. The standard suggested by the National Swimming Pool Institute is once in 18 hours when the flow is calculated at a maximum of five gallons per minute per square foot of filter area. The Grand Rapids ordinance requires a turnover once in 12 hours when the flow is calculated at a maximum of three gallons per minute per square foot of filter area.

This section should also specify the capacity of the recirculating pump for backwashing, placement of the hair and lint strainer, specifications for the filter media, and the minimum requirements for pool piping and valves.

3. Chemical Treatment. The minimum requirements for gaseous chlorinators, or an equally effective germicide or algaecide, should be listed. Mechanical chlorinators are not prevalent because of the danger involved in storing the chlorine. A survey conducted in the Los Angeles area found that the safest and best method for the average homeowner is intermittent manual or slug feeding, using calcium or sodium hypochlorite. The important consideration is to require the pool owner to have testing equipment to determine the chlorine residual of the pool and to be familiar with its use so that the residual may be kept between 0.5 and 1.0 parts per million.

In much the same manner it is important for the homeowner to be familiar with testing material to determine the hydrogen ion (pH or acidity-alkalinity) concentration, the testing equipment having a range of 6.8 to 8.0.

4. Water Supply. The potable water supply shall be installed as required by the American Water Works Association standards in such a way as to afford backflow protection. No over-the-rim spout should be accepted unless located under a diving board or installed in an approved manner so as to remove any hazard to the pool users.

5. Tests. All pool piping shall be inspected and tested at the required pressure (normally 50 pounds per square inch) prior to covering or concealing.

6. Waste Water Disposal. Provision for joining a storm sewer system, subsurface spreading, drywell, or surface irrigation, prescribing conditions for each method. Also the requirements for the location of receptors, overflow gutter drains, and provision for minimum fall.

7. Water Heating Equipment. Water heating equipment shall conform to design, construction, and installation requirements set forth for domestic water heaters. In addition, the heaters must have automatic controls which will shut off the fuel supply if water has drained from the heater or if the water is not in circulation. Domestic heaters are usually protected with an immersion aquastat which will cut off the gas supply so long as there is water or steam in the unit. Such controls will fail in a pool heater from which the water has drained.

Other Considerations. The above listed requirements pertain to the technical aspects of building, plumbing, and health. Listed below are other general factors that should be included in the residential swimming pool ordinance:

1. Safety of Bathers. These provisions include a smooth, nonslip finish for the deck or walk area and provision for easy ingress and egress, which would include either a ladder, steps, or a coping that provides a proper hand hold.

2. Fencing. This is one factor in the regulation of residential swimming pools that has received a great deal of attention. The requirements imposed range from "all private swimming pools

shall be completely enclosed by a fence erected along the periphery of the pool walks" to a provision that "in lieu of maintaining a fence, such persons may provide a competent person who shall keep the pool under observation at all times while water is kept in the pool. In the event the pool is not under the observation of a competent person, a pool cover or other protective device approved by the city engineer may be used."

These two quotations present extremes. As mentioned previously, the primary purpose of fencing is to protect infants and the unwary. A fence, per se, will not provide absolute protection. In a survey conducted in Los Angeles county covering a five-year period, there were more accidental fatalities of children under eight years of age behind fenced pools than in those unfenced, in spite of the fact that the unfenced pools far outnumbered the fenced ones.

The need of a fencing requirement should be carefully considered. Because of local conditions, some cities feel that fences are unnecessary, for example, in areas where there is a custom of fencing the entire property. If fencing is to be required, alternatives should be provided in the type of material required, or the use of other protective devices. Provision should also be made for an exemption where it is felt that the pool does not constitute a hazard. The fencing requirement should be elastic enough to protect small children without imposing overly stringent regulations.

In the cities that do require fences, the fence is to be at least four feet in height, be provided with self-closing gates, and have self-latching devices on the gates. The size of the openings in the fence are not to be greater than a certain size in order to keep out small children, although some cities also require the fence to be solid so as to screen the pool and cut down on the noise.

3. Lighting. The provision for lighting normally states that there shall be a sufficient quantity and that it be shielded from adjoining properties or the public street by means of reflectors or some such device. All underwater illumination shall be grounded and of an approved type.

4. Pool Cleanliness. Most ordinances provide for some method of cleaning the pool of debris (vacuuming or pool rake) and also provide for a hose connection so that the pool may be scrubbed down while empty.

5. Periodic Inspections. The health department should maintain the right to make periodic inspections to see to it that the provisions of the ordinance are complied with and to require that the owner of the pool is thoroughly familiar with the operation of all the mechanical appurtenances of the pool. The pool owner should also know how to make the necessary tests as required above.

Penalty Clause. This clause usually points out what constitutes a violation, and sets up the minimum and maximum fines for each offense.

Effective Date. This clause establishes the effective date of the ordinance requiring all pools constructed after such date to comply with the provisions of the ordinance. The Shaker Heights, Ohio, ordinance goes one step further: "For pools already in existence, the director of health and commissioner of buildings shall furnish the owners with a program of improvements and additions which shall be carried out over a period not to exceed five years after notice, in order to comply with the requirements of this code."

Severability Clause. The clause that declares that any section found to be invalid by a court does not invalidate any other section.

Summary

Because of the rapid growth in the number of swimming pools in all sections of the country, many municipalities are turning to some form of regulation. In order to protect both the municipality and the prospective owner, the council should provide a comprehensive ordinance. This ordinance should carefully distinguish between public, semipublic, and private swimming pools, and establish minimum requirements for each category.

The comprehensive ordinance should contain specific technical requirements and also refer to existing applicable regulatory codes. The use of a comprehensive ordinance facilitates reference both for the prospective owner and the enforcing official.

Further Information. A variety of ordinances pertaining to various phases of swimming pool regulation are available on loan to MIS subscribers. The National Swimming Pool Institute (Harvard State Bank Building, Harvard, Illinois) makes available copies of minimum requirements for both public and private swimming pools. The Institute also has 10 regional standards subcommittees who are available for consultation upon request. *Swimming Pool Age* (Hoffman-Harris, Inc., 425 Fourth Avenue, New York 16) publishes a swimming pool data and reference annual, which is quite useful to individuals or groups planning new pools. It contains latest developments in design, technical advances, and information on pool operation, new products, and swimming safety.

Acknowledgements. Grateful acknowledgement is made to the city managers and other municipal officials who submitted ordinances pertaining to swimming pool regulation. Many useful comments were provided by the following persons who reviewed a tentative draft of this report: L. M. McConnell, city manager, South Miami, Florida; Donald M. Oakes, city manager, and W. L. Ettseveld, public health engineer, Grand Rapids, Michigan; Wilson G. Stapleton, mayor, Shaker Heights, Ohio; John B. Wentz, administrative officer, Beverly Hills, California; Robert Clark, research associate, American Society of Planning Officials; Robert M. Hoffman, publisher, *Swimming Pool Age*; and the National Swimming Pool Institute — Stanley L. Curlett, president, David A. Brown, chairman of the national committee on residential pool minimum standards, and Robert S. Greene, executive secretary.

Note. This report was prepared by Philip R. Tuhy, staff member, the International City Managers' Association.

Appendix A

Sample Application Form

APPLICATION FOR INSTALLATION OF PRIVATE SWIMMING POOL
(As prescribed by Ordinance No. 0000)

Name of Owner Date Filed
 Address of Owner Permit No.
 Block Lot Permit Fee
 Name of Contractor
 Address of Contractor

MECHANICAL DATA (Indicate as below to expedite plan check)

Pool Volume _____	Gallons _____	Turnover _____	Hours _____
Pump Make _____	Model _____	Discharge Size _____	
Rated Capacity of Pump _____	GPM at _____	Ft. Head (Filtration) _____	
Rated Capacity of Pump _____	GPM at _____	Ft. Head (Backwashing) _____	
Motor Make _____	HP _____	RPM _____	
Filter Type _____	Make _____		
Size _____	Filter Area _____		
Filter Rate _____	GPM _____	Head in feet for this flow in piping system _____	
Backwash Capacity _____	GPM _____	Head in feet for this flow in piping system _____	
Drywell _____	Dia. _____	Side Wall Height _____	
Main Suction Pipe: Size _____	Mat'l _____	Length _____	Max Flo _____ Vel _____
Vacuum Line Pipe: Size _____	Mat'l _____	Length _____	Max Flo _____ Vel _____
Backwash Pipe: Size _____	Mat'l _____	Length _____	Max Flo _____ Vel _____
Return Pipe: Size _____	Mat'l _____	Length _____	Max Flo _____ Vel _____

NOTE: This application must be accompanied by duplicate set of plans, containing the following information — complete plot plan, drawing to scale, relation to existing structures, distance from property and set back lines, elevations of pool and adjacent areas, pool dimensions, pool depths, pool piping layout with valve locations, location of filter and water heaters, method of waste disposal, location of drywell, fill line detail, and data on heater and gas piping including permit.

Applicant's Signature

(Back of form will contain space for the approval of the Zoning Administrator, the Health Officer, the City Engineer, the Plumbing Inspector, the Building Inspector, and the Electrical Inspector, if required.)